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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/597,218	06/20/2000	Kimio Yamakawa	TSL1549	5276

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EXAMINER

GRAYBILL, DAVID E

ART UNIT

PAPER NUMBER

2827

DATE MAILED: 03/27/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/597,218

Applicant(s)

YAMAKAWA ET AL. *ck*

Examiner

David E Graybill

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 01 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) Z.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

The election requirement mailed 10-30-01 is herein withdrawn as being improper because the alleged species wherein the polymer is a silicone and an epoxy composition are not species because they are originally disclosed as usable together. Consequently, claims 1-17 are examined on the merits.

The disclosure is objected to because in the specification, at page 4, line 20 to page 5, line 1, silicon carbide and carbon are incorrectly listed as examples of inorganic materials.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 12, 14, 15 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 12, 14, 15 and 17, there is insufficient literal antecedent basis for the term, "the curable polymer composition."

Claims 12, 14, 15 and 17 have not been rejected over the prior art because, in light of the 35 U.S.C. 112 rejection supra, there is a great deal of confusion and uncertainty as to the proper interpretation of the limitations of the claims;

hence, it would not be proper to reject the claims on the basis of prior art. As stated in *In re Steele*, 305 F.2d 859, 134 USPQ 292 (CCPA 1962), a rejection should not be based on considerable speculation about the meaning of terms employed in a claim or assumptions that must be made as to the scope of the claims. See also MPEP 2173.06.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35

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U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2, 4, 5, 7, 8, 10, 11, 13 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakayoshi (JP7292343), or in the alternative, over the combination of Nakayoshi (JP7292343) and Sierawski (5882467).

In the JPO and Derwent English abstracts, the Japanese Patent Office translation sections [0020] and [0021], and the figures, Nakayoshi teaches the following:

1. An adhesive composition for bonding a semiconductor chip to an attachment member for the chip comprising a curable polymer composition comprising from 1000 to 1,000,000 weight-ppm spherical filler having an average particle size of from 10 to 100  $\mu\text{m}$  and a major axis-to-minor axis ratio of from 1 to 1.5.
2. The adhesive composition of 1, where the spherical filler has a particle size distribution with a standard deviation that does not exceed 10% ["3.0 micrometers or less"] of the average particle size of the filler.
4. The adhesive composition of 1, where the spherical filler is an inorganic spherical filler.
5. The adhesive composition of 1, where the curable polymer composition is a curable silicone composition.

7. The adhesive composition of 1, where the spherical filler has a major axis-to-minor axis ratio of from 1.0 to 1.1.

8. The adhesive composition of 1, where the curable polymer composition is an addition reaction-curable silicone composition.

10. A semiconductor device comprising a semiconductor chip bonded to an attachment member for the chip by an adhesive composition comprising from 1000 to 1,000,000 weight-ppm spherical filler having an average particle size of from 10 to 100 um and a major axis-to-minor axis ratio of from 1 to 1.5.

11. The semiconductor device according to 10, where the spherical filler has a particle size distribution with a standard deviation that does not exceed 10% of the average particle size of the filler.

13. The semiconductor device according to 10, where the spherical filler is an inorganic spherical filler.

16. The semiconductor device according to 10, where the spherical filler has a major axis-to-minor axis ratio of from 1.0 to 1.1.

However, Nakayoshi does not appear to explicitly teach the polymer composition comprising from 1 to 900 weight-ppm spherical filler or the following:

3. The adhesive composition of 1, where the curable polymer composition comprises from 1 weight-ppm to 700 weight-ppm spherical filler.

Nonetheless, Nakayoshi teaches that in a process of manufacturing the claimed adhesive, filler weight-ppm is a result-effective variable. Moreover, it would have been an obvious matter of design choice bounded by well known manufacturing constraints and ascertainable by routine experimentation and optimization to choose the particular claimed filler weight-ppm limitations because applicant has not disclosed that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical, and it appears prima facie that the process would possess utility using another weight-ppm. Indeed, it has been held that optimization of range limitations are prima facie obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. See MPEP 2144.05(II): "Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. '[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to

discover the optimum or workable ranges by routine experimentation.'" In re Aller, 220 F.2d 454, 105 USPQ 233, 235 (CCPA 1955). See also In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969), Merck & Co. Inc. v. Biocraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989), and In re Kulling, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990). As set forth in MPEP 2144.05(III), "Applicant can rebut a prima facie case of obviousness based on overlapping ranges by showing the criticality of the claimed range. 'The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims. . . . In such a situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range.' In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). See MPEP § 716.02 - § 716.02(g) for a discussion of criticality and unexpected results."

Because applicant cites Nakayoshi in the original disclosure, it appears that applicant considers the claims unpatentable over Nakayoshi alone. Therefore, in the alternative, the claims are further rejected under 35



U.S.C. 103(a) as obvious over the combination of Nakayoshi and Sierawski.

Specifically, Nakayoshi does not appear to explicitly teach the polymer composition comprising from 1 to 900 weight-ppm spherical filler or the following:

3. The adhesive composition of 1, where the curable polymer composition comprises from 1 weight-ppm to 700 weight-ppm spherical filler.

Nonetheless, at column 10, lines 34-43, Sierawski teaches an adhesive polymer composition comprising from 1 to 900 weight-ppm spherical filler ["less than about 20 weight percent"]. Moreover, it would have been obvious to combine the product of Sierawski with the product of Nakayoshi because it would provide a filler.

Claims 6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Nakayoshi (JP7292343) and Sierawski (5882467).

The prior art is applied as it was applied to claim 1, and further applied infra.

Nakayoshi does not appear to explicitly teach the following:

6. The adhesive composition of 1, where the curable polymer composition is a curable epoxy resin composition.

9. The adhesive composition of 1 further comprising a thixotropic agent where the thixotropic agent has a specific surface area of 50 to 500 m<sup>2</sup>/g.

Nevertheless, the quality of being a thixotropic agent is an inherent property of the composition of the applied prior art.

In addition, at column 3, line 24 to column 4, line 32, and column 8, lines 52-67, Sierawski teaches where a curable polymer composition is a curable epoxy resin composition comprising a filler that has a specific surface area of 50 to 500 m<sup>2</sup>/g ["at least 50 square meters per gram"].

Furthermore, it would have been obvious to combine the product of Sierawski with the product of Nakayoshi because it would provide a polymer composition and a filler.

The prior art made of record and not applied to the rejection is considered pertinent to applicant's disclosure. It is cited primarily to show inventions similar to the instant invention.

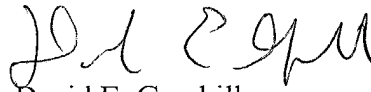
***Any telephone inquiry of a general nature or relating to the status (MPEP 203.08) of this application or proceeding should be directed to the group receptionist whose telephone number is 703-308-1782.***

Any telephone inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Graybill at (703) 308-2947. Regular office hours: Monday through Friday, 8:30 a.m. to 6:00 p.m.

The fax phone number for group 2800 is 703/305-3431.

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A handwritten signature in cursive script, appearing to read 'D E Graybill'.

David E. Graybill  
Primary Examiner  
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D.G.  
21-Mar-02